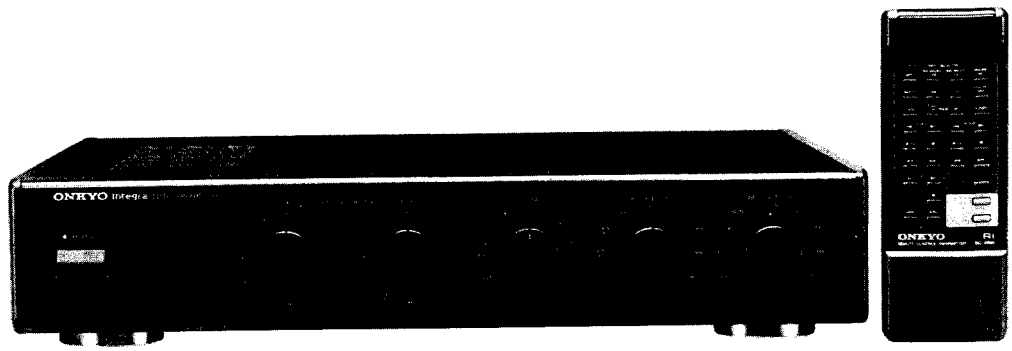
P-3890

Ref.No. 3433

ONKYO® SERVICE MANUAL

Stereo Pre Amplifier

MODEL P-3890



Silver and Black models

UP	230V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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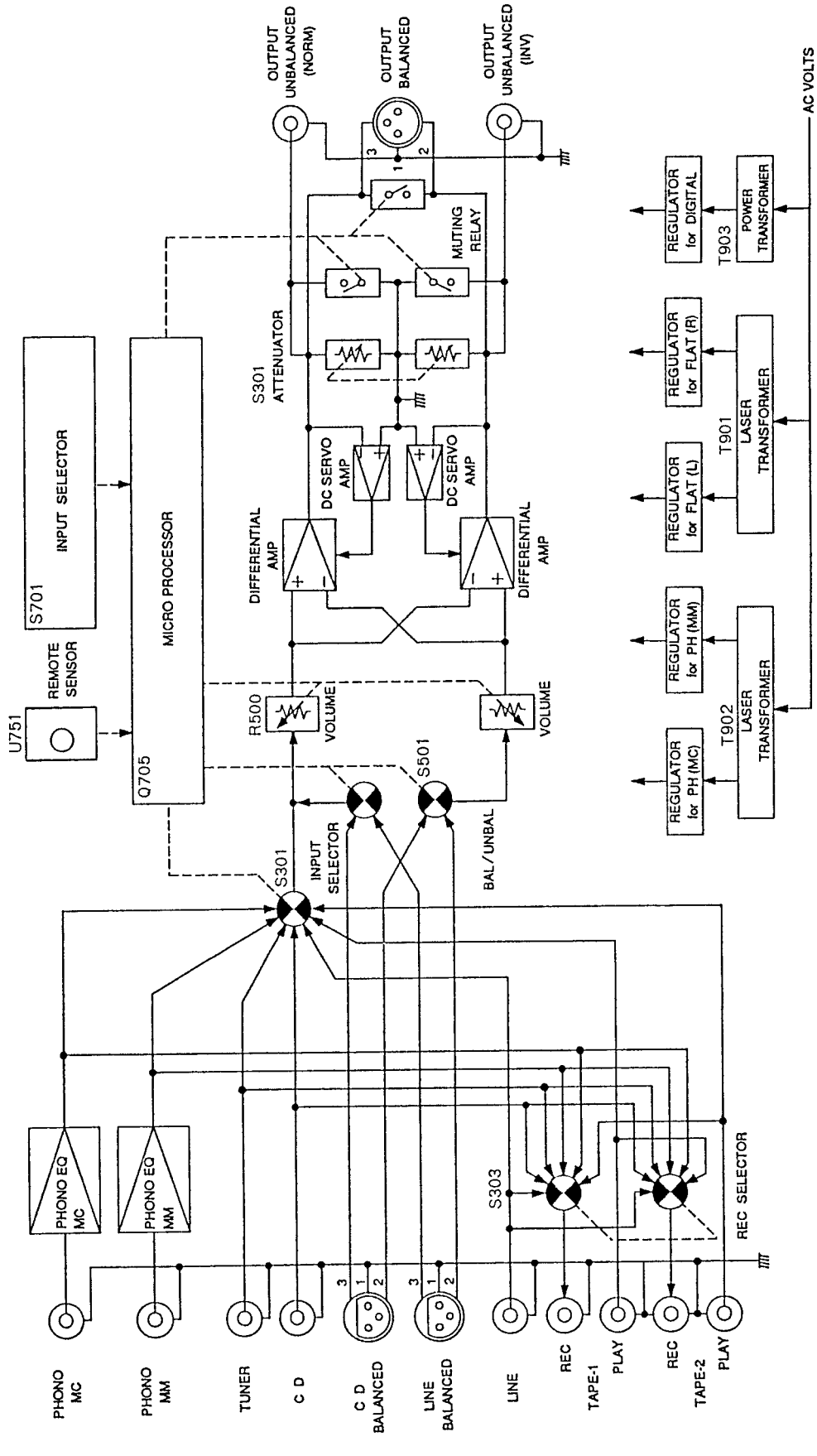
ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Input Sensitivity and Impedance:			
	PHONO MC:	160 μV	100 ohms
	PHONO MM:	2.5 mV	47 kohms
	BALANCED:	150 mV	30 kohms (Hot-Cold)
	UNBALANCED:	150 mV	15 kohms
Rated Output and Impedance:			
	BALANCED:	1.0V	200 ohms
	UNBALANCED:	0.5V	100 ohms
	TAPE REC:	150mV	1.1 kohms
Maximum Output:			
	BALANCED:	10.0V	
	UNBALANCED:	5.0V	
	TAPE REC:	12.0V at Phono Input	
RIAA Deviation:		± 0.2dB at 20-20,000 Hz	
Phono Overload:			
	PHONO MC:	13 mV RMS at 1kHz, THD 0.05%	
	PHONO MM:	200 mV RMS at 1kHz, THD 0.05%	
Frequency Response (CD):			
	Balanced/Unbalanced	+0, –3 dB at 0.8 Hz – 170 kHz	
Total Harmonic Distortion:			
	PHONO MC:	0.005% at 3V OUTPUT	
	PNONO MM:	0.0008% at 3V OUTPUT	
	CD (BAL, UNBAL):	0.0005% at 3V OUTPUT	
Intermodulation Distortion:			
	CD (BAL, UNBAL):	0.003% at 70 Hz : 7kHz=4 : 1	
Signal-to-Noise Ratio:			
	PHONO MC:	81 dB (0.5 mV Input A-Weighted)	
	PHONO MM:	92 dB (5.0 mV Input A-Weighted)	
	CD (BAL, UNBAL):	105 dB (150 mV Input A-Weighted) at Balanced Output	
Power Supply:			
	European models:	AC230V, 50 Hz	
Controls:	POWER		
	OUTPUT ATTENUATOR (L, R), (0, –1, –2, –3, –6, –12dB)		
	VOLUME		
	REC. SELECTOR (MM, MC, TUNER, CD, LINE, TAPE1 ► 2, TAPE2 ► 1)		
	INPUT SELECTOR (MM, MC, TUNER, CD, CD-BAL, LINE-BAL, LINE, TAPE-1, TAPE-2)		
	OUTPUT MUTING (-∞) (Remote Control only)		
Inputs:	MC (PHONO), MM (PHONO), TUNER, CD, CD-BAL (BALANCED)		
	LINE-BAL (BALANCED), LINE, TAPE-1, TAPE-2		
Outputs:	TAPE REC OUT	TAPE-1 & 2	
	OUTPUT	BALANCED	
		UNBALANCED NORMAL & INVERT	
Dimensions:		455 (W) × 90 (H) × 418 (D)	
		17-15/16" (W) × 3-9/16" (H) × 16-7/16" (D)	
	(side panels included)	475 (W) × 90 (H) × 418 (D)	
		18-11/16" (W) × 3-9/16" (H) × 16-7/16" (D)	
Weight:		8.9 kg, (19.6 lbs.)	
	(side panels included)	9.2 kg (20.3 lbs.)	

Specifications and features are subject to change without notice.

BLOCK DIAGRAM



PRECAUTIONS

1. **Replacing the fuses**
   For continued protection against risk fire, replace only with same type and same rating fuse.

CIRCUIT NO.	PART NO.	DESCRIPTION
F902	252069 or	0.8A-SE-EAK or
	252069CC	0.8A-SE-EAK, Primary fuse

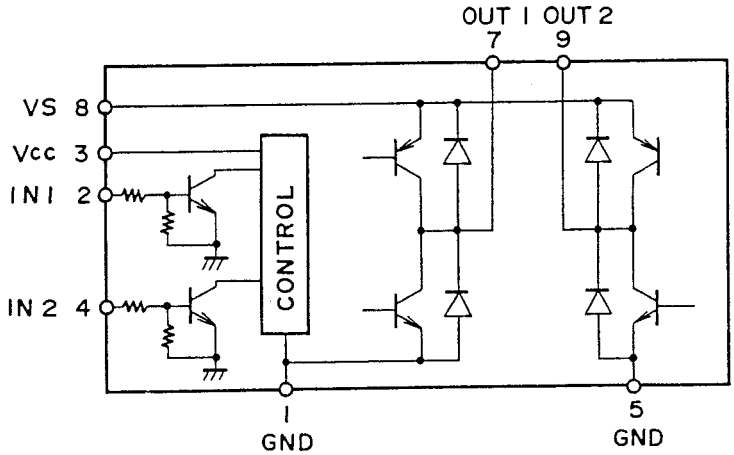
2. When replacing the power transformer (T903), make sure to affix a rating label to the transformer.

REF. NO.	PART NO.	DESCRIPTION
A859	29361441	Rating label

3. When installing the power transformer (T903) on the chassis, make sure to use the specified screws. (Safety)
   Tap-tight screw → 4TTC+8C(BC), [830440089]

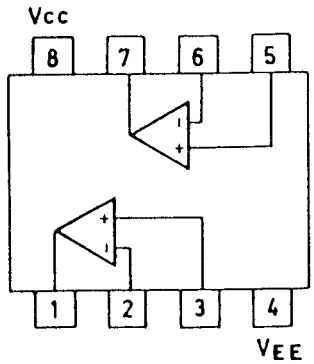
IC BLOCK DIAGRAM

LB1638 (Motor drive)

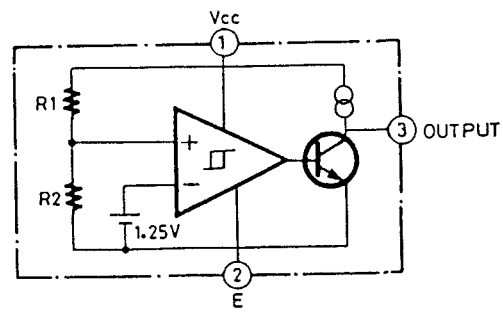


IN 1	IN 2	OUT 1	OUT 2	MODE
H	L	H	L	NORMAL
L	H	L	H	REVERSE
H	H	L	L	BRAKE
L	L	OFF	OFF	WAIT

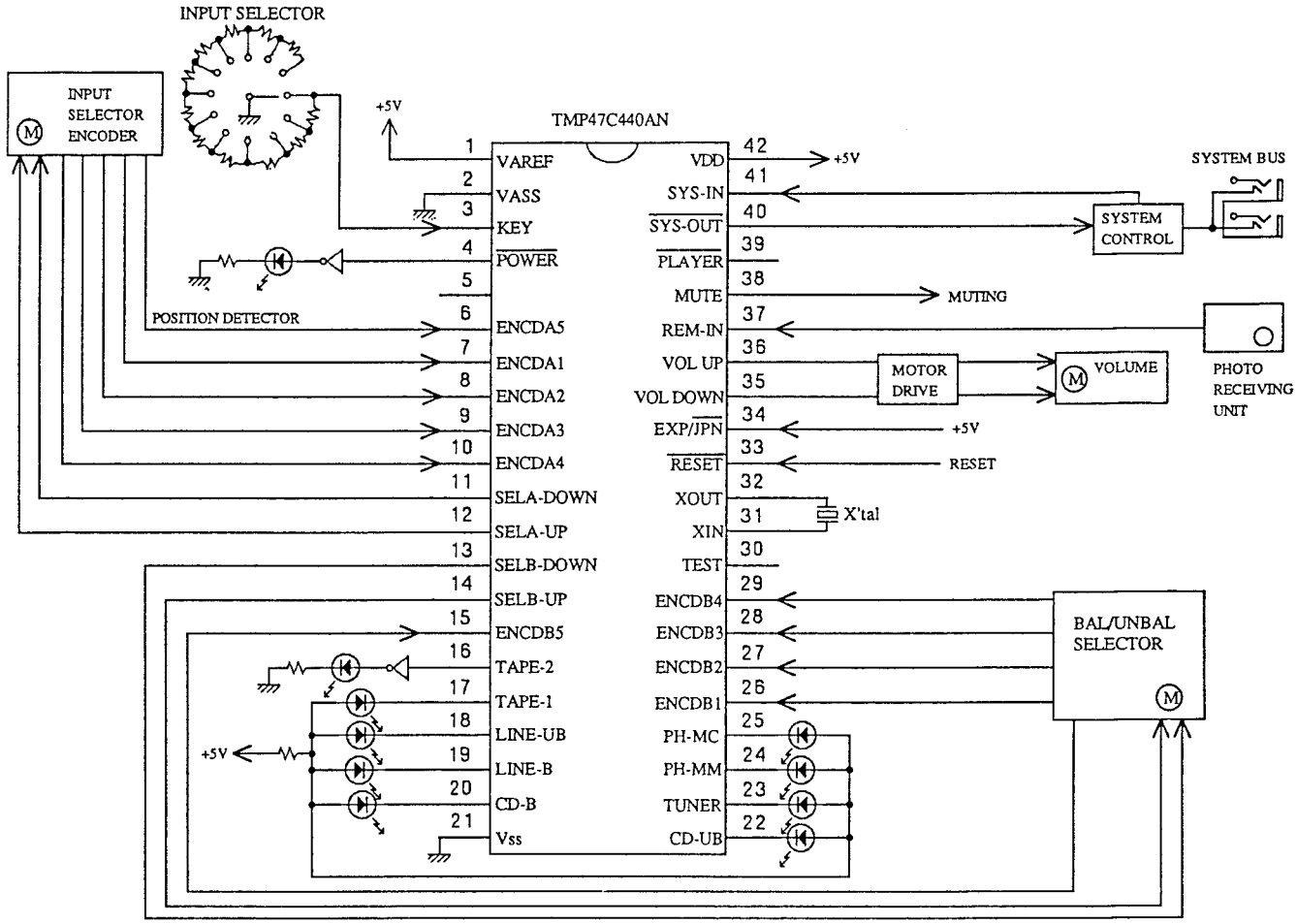
NJM5532DD (OP Amp)
NJM4558D



M51943BSL (System reset)



TMP47C440AN-G701 (Microprocessor)



Pin No.	Symbol	Description
1	VAREF	Analog reference voltage for A/D conversion.
2	VASS	Analog reference GND for A/D conversion.
3	KEY	Input terminal for Input selector key. Through A/D conversion, Input selector key will be fetched.
4	POWER	Output terminal for power display. Lighted in case of "L". "L" will be output at any time.
5	VOL	Output terminal for volume display. Lighted in case of "L". Winks in 1 Hz muting ON.
6	ENCDA5	Selector-A position detector input terminal.
7	ENCDA1	
8	ENCDA2	
9	ENCDA3	
10	ENCDA4	
11	SELA DOWN	UP/DOWN Output terminal for Input selector-A. Active "H".
12	SELA UP	

OPERATION	SEL-A UP	SEL-A DOWN
STOP	H	H
UP	H	L
DOWN	L	H

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Description</th></tr>
<tr><td>13</td><td>SELB DOWN</td><td rowspan="2">UP/DOWN Output terminal for Bal/Unbal selector. Active "H".
<table>
<tr><td>OPERATION</td><td>SEL-B UP</td><td>SEL-B DOWN</td></tr>
<tr><td>STOP</td><td>H</td><td>H</td></tr>
<tr><td>UP</td><td>H</td><td>L</td></tr>
<tr><td>DOWN</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>14</td><td>SELB UP</td></tr>
<tr><td>15</td><td>ENCDB5</td><td>Selector-B position detector input terminal.</td></tr>
<tr><td>16</td><td>TAPE-2</td><td rowspan="5">Output terminal for Input selector display.
Output of the position currently selected will be "L" (Light).
* UB ..... UNBALANCE, B ..... BALANCE</td></tr>
<tr><td>17</td><td>TAPE-1</td></tr>
<tr><td>18</td><td>LINE-UB</td></tr>
<tr><td>19</td><td>LINE-B</td></tr>
<tr><td>20</td><td>CD-B</td></tr>
<tr><td>21</td><td>VSS</td><td>GND terminal.</td></tr>
<tr><td>22</td><td>CD-UB</td><td rowspan="4">Output terminal for Input selector display.
Output of the position currently selected will be "L" (Light).</td></tr>
<tr><td>23</td><td>TUNER</td></tr>
<tr><td>24</td><td>PH-MM</td></tr>
<tr><td>25</td><td>PH-MC</td></tr>
<tr><td>26</td><td>ENCDB1</td><td rowspan="4">Selector-B position detector input terminal.</td></tr>
<tr><td>27</td><td>ENCDB2</td></tr>
<tr><td>28</td><td>ENCDB3</td></tr>
<tr><td>29</td><td>ENCDB4</td></tr>
<tr><td>30</td><td>TEST</td><td>Shipment Test. To be connected with GND.</td></tr>
<tr><td>31</td><td>XIN</td><td rowspan="2">Terminal for connecting with Ceramic oscillator (4 MHz).</td></tr>
<tr><td>32</td><td>XOUT</td></tr>
<tr><td>33</td><td>RESET</td><td>Input terminal for System reset.</td></tr>
<tr><td>34</td><td>EXP/JPN</td><td>Input terminal for Remote control code Initialization when power switch ON.</td></tr>
<tr><td>35</td><td>VOL DOWN</td><td rowspan="2">Volume UP/DOWN Output terminal. Active "H".
<table>
<tr><td>OPERATION</td><td>VOL UP</td><td>VOL DOWN</td></tr>
<tr><td>STOP</td><td>H</td><td>H</td></tr>
<tr><td>UP</td><td>H</td><td>L</td></tr>
<tr><td>DOWN</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>36</td><td>VOL UP</td></tr>
<tr><td>37</td><td>REM IN</td><td>Remote control signal input terminal. Active "L".</td></tr>
<tr><td>38</td><td>MUTE</td><td>Muting output terminal. Active "H".</td></tr>
<tr><td>39</td><td>PLAYER</td><td>Output terminal for Player control.</td></tr>
<tr><td>40</td><td>SYS OUT/SYS EN</td><td>Output terminal for System code. Active "L".</td></tr>
<tr><td>41</td><td>SYS IN</td><td>Input terminal for System code. Active "H".</td></tr>
<tr><td>42</td><td>VDD</td><td>Power (+5V) Connecting terminal.</td></tr>
</table>

CHASSIS-EXPLODED VIEW PARTS LIST

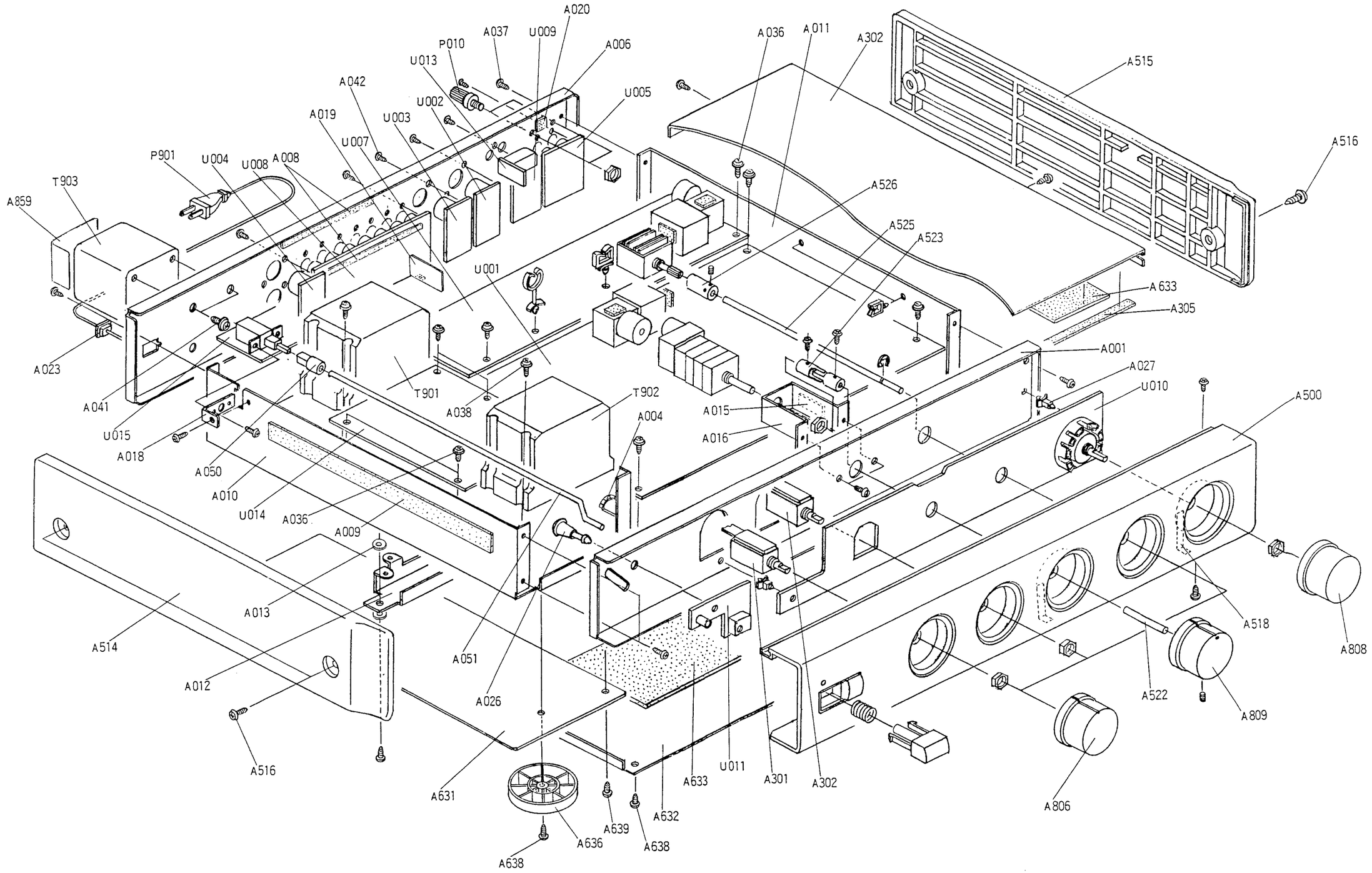
REF. NO.	PART NO.	DESCRIPTION
A001	27110709	Front bracket ass'y
A004	28170031	Bushing
A006	27121594A	Rear panel
A007	28140972	t1.5×25×140, Cushion
A008	28141220	t5×125 ×12, Cushion
A009	28140782	t1.5×25×170, Cushion
A010	27130696	Bracket (L)
A011	27130697	Bracket (R)
A012	27130698	Bracket (PC)
A013	27270147	Spacer
A015	28141221	t1.5×20×45, Cushion
A016	27141547A	Bracket (VOL)
A018	27141549	Bracket (POW)
A019	27141584	Bracket (SI)
A020	28141226	t5×10×20, Cushion
A023	28190009	Bushing (CORD)
A026	27190657	KGLS-18RF, Holder
A027	27190897	KGLS-3S, Holder
A036	831130088	3TTW+8B, Tap-tight screw
A037	801230	3STS+8BQ(BC), Tap-tight screw
A038	830440109	4TTC+10C(BC), Tap-tight screw
A041	830440089	4TTC+8C(BC), Tap-tight screw
A042	82142604	2.6P+4F(BC), Tap-tight screw
A050	27273152	Joint (POW)
A051	27260323	Shaft (POW)
A061	250153	Shorted pin
A063	79087	Glass tube
A302	28184526	Top cover
A303	28140695	t1.5×25×240, Cushion (Cover)
A305	28141222	t0.5×15×425, Cushion
A500	1A371701K	Front panel ass'y [BLK]
(A504)	27267785	Guide (AT) [BLK]
(A505)	27267786	Guide (REC) [BLK]
(A507)	27267787	Guide ass'y (SEL) [BLK]
(A509)	27267789	Guide ass'y (VOL) [BLK]
(A511)	28135199	Name plate
(A801)	28191593-1	Clear plate (RE)
(A803)	28198721	Facet
(A811)	27267790A	Guide ass'y (POW) [BLK]
(A811b)	28324626	Knob ass'y (POW) [BLK]
(A811c)	27180398A	Spling
A500	1A386701K	Front panel ass'y [SIL]
(A504)	27267803	Guide (AT) [SIL]
(A505)	27267804	Guide (REC) [SIL]
(A507)	27267806	Guide ass'y (SEL) [SIL]
(A509)	27267809	Guide ass'y (VOL) [SIL]
(A811)	27267808A	Guide ass'y (POW) [SIL]
(A811b)	283224667	Knob ass'y (POW) [SIL]
A514	28185369	Side board (L)
A515	28185370	Side board (R)
A516	837440169	4TTT+16C(BC), Tap-tight screw
A518	29110066	W=5, Aluminum tape
A522	27260319	Shaft ass'y (VOL)
A523	27273133-1B	Joint ass'y
A525	27260321	Shaft ass'y (SEL)
A526	27273092A	Joint
A631	27170290	Bottom board (L)
A632	27170291	Bottom board (R)
A633	28141009	t1.5×195 ×125, Cushion
A636	27175254	Bottom leg ass'y
A638	834430088	3TTS+8B(BC), Tap-tight screw
A639	801230	3STS+8BQ(BC), Tap-tight screw

REF. NO.	PART NO.	DESCRIPTION
A806	28324631	Knob (AT) [BLK]
A806	28324665	Knob (AT) [SIL]
A808	28324632	Knob (SEL) [BLK]
A808	28324666	Knob (SEL) [SIL]
A809	28324635	Knob (VOL) [BLK]
A809	28324664	Knob (VOL) [SIL]
A859	29361440	Rating label
⚠ T901	2300822C	NPT-1148P, Power transformer
⚠ T902	2300826C	NPT-1149P, Power transformer
⚠ T903	2300830B	NPT-1150P, Power transformer
S301,S302	25030358	NRSF-106-20BU, Rotary switch
P010,P110	25060180	NTM-1SC106, Ground terminal
⚠ P901	253131A	AS-CEE-3, Power supply cable
⚠ F902	252069	0.8A-SE-EAK, Primary fuse or
	252069CC	0.8A-SE-EAK, Primary fuse
U001	1A371500-1A	NAAF-4500-1A, Equalizer and Flat amplifier pc board ass'y
U002	1A370501-1	NAETC-4501-1, Balanced CD input terminal pc board ass'y
U003	1A370502-1	NAETC-4502-1, Balanced LINE input terminal pc board ass'y
U004	1A370503-1	NAETC-4503-1, Balanced output terminal pc board ass'y
U005	1A371504-1A	NAETC-4504-1A, PHONO input terminal pc board ass'y
U007	1A371506-1A	NASW-4506-1A, Input selector switch circuit pc board ass'y
U008	1A370507-1	NAETC-4507-1, Output terminal pc board ass'y
U009	1A370508-1	NAETC-4508-1, Input terminal pc board ass'y
U010	1A370509-1	NADG-4509-1, Microprocessor circuit pc board ass'y
U011	1A370510-1	NADIS-4510-1, Photo receiving circuit pc board ass'y
U013	1A370512-1	NAETC-4512-1, RI terminal pc board ass'y
U014	1A370513-1	NAPS-4513-1, Power supply circuit pc board ass'y
U015	1A370514-1A	NASW-4514-1A, Power switch circuit pc board ass'y

NOTE [BLK]: Only Black models
[SIL]: Only Silver models

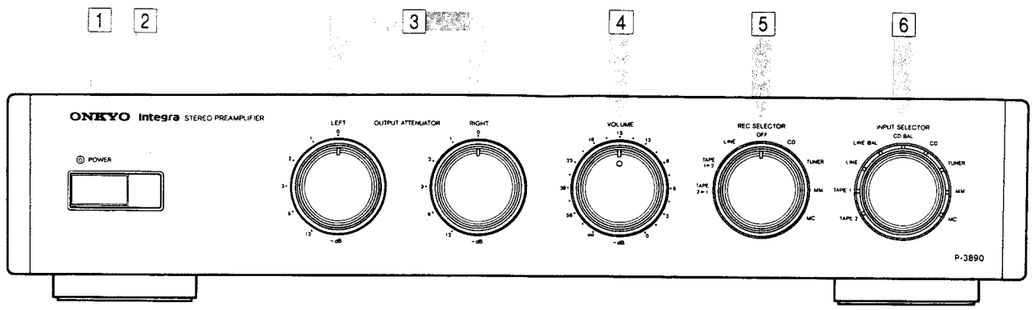
NOTE:
THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CHASSIS-EXPLODED VIEW



FRONT AND REAR PANEL

Front panel



[1] **Power Switch (POWER) and Indicator**
Press the power switch to turn the power on, and the indicator will light. Press it again, and the power will be turned off. For 5 seconds after the power is turned on, muting will prevent the signal from being output, until the internal circuit works properly.

[2] **Remote Control Sensor**
This receives signals sent from RC-235S remote control transmitter.

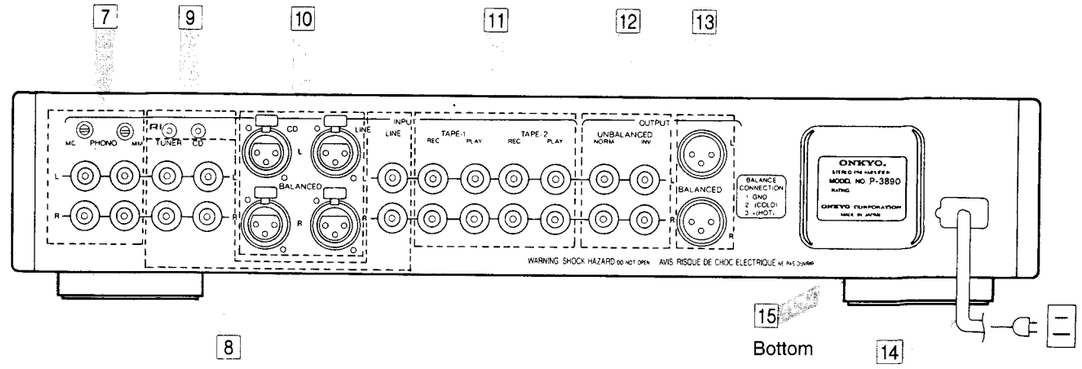
[3] **Output Attenuator Switch (OUTPUT ATTENUATOR LEFT/RIGHT)**
This switch adjusts the output level of the output terminal. Also use it for L and R level adjustment, since left and right are independent of each other. Set the attenuate amount to one of these 6 values: 0, –1, –2, –3, –6 and –12 (dB). Normal setting is 0.

[4] **Volume Control Knob (VOLUME)**
This controls volume. Turning it clockwise increases volume. When controlling with the remote control transmitter, pressing "UP" or "DOWN" increases or decreases volume respectively.

[5] **Rec Selector Switch (REC SELECTOR)**
This switch selects the recording source. Output signal of TAPE-1 and TAPE-2 REC terminal are switched.
MC ..... Select this to record the record player connected to the PHONO MC terminal.
MM ..... Select this to record the record player connected to thePHONO MM terminal.
TUNER ... Select this to record the source connected to the TUNER terminal.
CD ..... Select this to record the source connected to the CD terminal.
OFF ..... Select this to not record or dub.
LINE ..... Select this to record the source connected to the LINE terminal.
TAPE 1►2 .. Select this to dub from TAPE-1 to TAPE-2.
TAPE 2►1 .. Select this to dub from TAPE-2 to TAPE-1.
* Recording or dubbing can be performed regardless of the input selector's setting.
* A source connected to the BALANCED terminal cannot be recorded.

[6] **Input Selector Switch and Indicators (INPUT SELECTOR)**
This switch is used to select the desired program source. The switch can be turned in either direction without end stops. An indicator lights to show which program has been selected. The switch is also able to be switched directly using the Input Selector buttons on the remote control transmitter.
- Make sure that the device of the selected source is connected to the appropriate terminal.

Rear panel



[7] **Record Player Input Terminal (PHONO MM • MC)**
This terminal connects the record player. Make a selection in accordance with the cartridge to be used.
MM ..... Connect to this terminal when using a MM type cartridge.
MC ..... Connect to this terminal when using a MC type cartridge.
When using a step-up transformer or head amplifier, connect to the MM terminal, even when using a MC type cartridge.
* A short pin is inserted to this terminal before shipment from the factory. To use this terminal, remove the short pin and store it, or insert it to another input terminal. Do not insert it into the output terminal or TAPE REC terminal. Doing so may terminate sound production or cause abnormal operation.

[8] **TUNER, CD and LINE Input Terminals**
This terminal connects the CD player, tuner, etc.

[9] **Remote Control Jacks**
The remote control jacks are used to connect ONKYO products bearing the "RI" mark via the accessory remote control cable. When this unit is connected with ONKYO CD players or cassette decks bearing the "RI" mark, it can also be controlled by the remote control transmitter RC-235S. (Refer to page 7.)

[10] **Balance Input Terminal (BALANCED CD/LINE)**
This terminal connects devices with balance output, such as the CD player. This terminal is equivalent to XLR-3-31.
Pin polarity 1 : GND
2 : – (COLD)
3 : + (HOT)

[11] **Tape Deck Connecting Terminal (TAPE-1 PLAY/REC, TAPE-2 PLAY/REC)**
The unit can connect two tape decks.

[12] **Unbalance Output Terminal (OUTPUT UNBALANCED NORM/INV)**
NORM .... Outputs the same phase signal in response to the input signal
INV ..... Outputs the reverse phase signal in response to the input signal.
* The output impedance is 100Ω. Normally, it is connected to the amplifier by using the NORM side.

[13] **Balance Output Terminal (OUTPUT BALANCED NORM/INV)**
The output impedance is 200Ω. This terminal is equivalent to XLR-3-32. Suitable connectors are XLR-3-11C equivalent products.
Pin polarity 1 : GND
2 : – (COLD)
3 : + (HOT)

[14] **Power Supply Cord.**

[15] **Voltage Selector (Bottom)**
This is provided only for worldwide models.
For details, see page 3.

PRINTED CIRCUIT BOARD PARTS LIST

EQUALIZER AND FLAT AMPLIFIER PC BOARD (NAAF-4500-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q051,Q151 Q621,Q622	222902	NJM5532DD
Q813,Q814	222465	NJM4558D
	Transistors	
Q001~Q008	2214739	2SK369(ONK)
Q009,Q010	2213666 or 2213667	2SA1240-F 2SA1240-G
Q011,Q012	2211414	2SC1627-Y
Q017~Q022	2211975	2SA1015L-GR
Q023,Q024	2211895	2SC1815L-GR
Q025,Q026	2211414	2SC1627-Y
Q027,Q028	2211424	2SA817-Y
Q101~Q104	2214739	2SK369(ONK)
Q109,Q110	2213666 or 2213667	2SA1240-F or 2SA1240-G
Q111,Q112	2211414	2SC1627-Y
Q113~Q116	2211895	2SC1815L-GR
Q117~Q122	2211975	2SA1015L-GR
Q123,Q124	2211895	2SC1815L-GR
Q125,Q126	2211414	2SC1627-Y
Q127,Q128	2211424	2SA817-Y
Q501~Q508	2212186 or 2212187	2SK170-BL or 2SK170-V
Q509~Q512	2211255	2SC1815-GR
Q513,Q514	2214725 or 2214726	2SC3708-S or 2SC3708-T
Q515,Q516	2214715 or 2214716	2SA1450-S or 2SA1450-T
Q519,Q520	2214725 or 2214726	2SC3708-S or 2SC3708-T
Q517,Q518	2214715 or 2214716	2SA1450-S or 2SA1450-T
Q521~Q524	2211895	2SC1815L-GR
Q525~Q528	2211975	2SA1015L-GR
Q529,Q530	2211255	2SC1815-GR
Q531~Q540	2211455	2SA1015-GR
Q541~Q554	2211255	2SC1815-GR
Q555~Q560	2211455	2SA1015-GR
Q601,Q602	2212864	2SC3419-Y
Q603,Q604	2202584	2SA1356-Y
Q605,Q606	2212864	2SC3419-Y
Q607,Q608	2202584	2SA1356-Y
Q801~Q804	2211945	2SK246-GR
Q805,Q806	2211455	2SA1015-GR
Q807,Q808	2211255	2SC1815-GR
Q809,Q810	2202175 or 2202176	2SB1370-E or 2SB1370-F
Q811,Q812	2202115 or 2202116	2SD2061-E or 2SD2061-F
Q851,Q852	2211945	2SK246-GR
Q853	2211455	2SA1015-GR
Q854	2211255	2SC1815-GR
Q855	2202175 or 2202176	2SB1370-E or 2SB1370-F
Q856	2202115 or 2202116	2SD2061-E or 2SD2061-F
Q871,Q872	2211945	2SK246-GR
Q873	2211455	2SA1015-GR
Q874	2211255	2SC1815-GR
Q875	2202175 or 2202176	2SB1370-E or 2SB1370-F
Q876	2202115 or 2202116	2SD2061-E or 2SD2061-F
	Diodes	
D001~D006 D101~D106 D501~D516	225251	TLR112, LED
D791	223163 or 223205	1S133 or 1SS270A
D801~D804 D851,D852 D871,D872	224450512	MTZ5.1B, Zener
	Coils	
L101, L102	231133	NCH-1188
	Capacitors	
C005,C006	373632224	2200 pF, 100V, Film (KP)
C007,C008	372122214	220 pF, 50V, Styrene
C009,C010	373632214	220 pF, 100V, Film (KP)
C011~C014	373552434	0.024 μF, 250V, Film (MKP)
C015,C016	373554334	0.043 μF, 250V, Film (MKP)
C017,C018	372126804	68 pF, 50V, Styrene
C019~C022	372122204	22 pF, 50V, Styrene
C023,C024	391622217	220 μF, 6.3V, Elect.(FS)
C025,C026	373631024	1000 pF, 100V, Film (KP)
C027~C030	391651017	100 μF, 25V, Elect.(FS)
C031,C032	391622217	220 μF, 6.3V, Elect.(FS)
C051~C058	391652217	220 μF, 25V, Elect.(FS)
C059,C060	372123304	33 pF, 50V, Styrene
C103,C104	373631014	100 pF, 100V, Film (KP)
C107,C108	373632224	2200 pF, 100V, Film (KP)
C111~C114	373552434	0.024 μF, 250V, Film (MKP)
C115,C116	373554334	0.043 μF, 250V, Film (MKP)
C117,C118	372126804	68 pF, 50V, Styrene
C119~C122	372122204	22 pF, 50V, Styrene
C123,C124	391622217	220 μF, 6.3V, Elect.(FS)
C125,C126	373632224	2200 pF, 100V, Film (KP)

Caution: Specification of transistors 2SK369(ONK) used in this unit have been precisely selected so that DC voltage does not appoar at the speaker terminals.
Transistors belouging to one of the following groups must be matched type.

Group 1: Q001, Q003, Q005, Q007
2: Q002, Q004, Q006, Q008
3: Q101, Q103
4: Q102, Q104

When you replace some of these transistors, do not forget to replace all the transistors in each group with matched type which have been delivered from ONKYO parts Center at the same time on the same day.

CIRCUIT NO.	PART NO.	DESCRIPTION
C127~C130	391651017	100 μF, 25V, Elect.(FS)
C131,C132	391622217	220 μF, 6.3V, Elect.(FS)
C151~C158	391652217	220 μF, 25V, Elect.(FS)
C159,C160	372123304	33 pF, 50V, Styrene
C501,C502	373631014	100 pF, 100V, Film (KP)
C505~C508	391654707	47 μF, 25V, Elect.(FS)
C509~C512	391661017	100 μF, 35V, Elect.(FS)
C521~C524	372122704	27 pF, 50V, Styrene
C525~C528	372124704	47 pF, 50V, Styrene
C529~C532	391654707	47 μF, 25V, Elect.(FS)
C533~C540	391622217	220 μF, 6.3V, Elect.(FS)
C601,C602	373631024	1000 pF, 100V, Film (KP)
C621~C626	373722254	2.2 μF, 50V, Film (MKT)
C791	374721034	0.01 μF, 50V, Film (TF)
C801~C804	391621017	100 μF, 6.3V, Elect.(FS)
C805~C808	374721034	0.01 μF, 50V, Film (TF)
C809~C812	393361007	10 μF, 35V, Elect.(VX)
C813~C816	391642227	2200 μF, 16V, Elect.(FS)
C817~C820	374722234	0.022 μF, 50V, Film (TF)
C851,C852	391621017	100 μF, 6.3V, Elect.(FS)
C853,C854	374721034	0.01 μF, 50V, Film (TF)
C855,C856	391680107	1 μF, 50V, Elect.(FS)
C857,C858	391651027	1000 μF, 25V, Elect.(FS)
C871,C872	391621017	100 μF, 6.3V, Elect.(FS)
C873,C874	374721034	0.01 μF, 50V, Film (TF)
C875,C876	391680107	1 μF, 50V, Elect.(FS)
C877,C878	391651027	1000 μF, 25V, Elect.(FS)
	Resistors	
R011~R014	442526804	68 Ω, 1/2W, Metal oxide film
R019,R020	442528204	82 Ω, 1/2W, Metal oxide film
R037,R038	442524714	470 Ω, 1/2W, Metal oxide film
R039~R042	442521804	18 Ω, 1/2W, Metal oxide film
R111~R114	442521314	130 Ω, 1/2W, Metal oxide film
R119,R120	442521614	160 Ω, 1/2W, Metal oxide film
R137,R138	442524714	470 Ω, 1/2W, Metal oxide film
R139~R142	442521804	18 Ω, 1/2W, Metal oxide film
R500	5104311	N27RQL20KA20F, Variable
R515~R522	442522204	22 Ω, 1/2W, Metal oxide film
R613~R620	442521004	10 Ω, 1/2W, Metal oxide film
	Relay	
RL311	25065335	NRL-2P1.25A-DC5-045
	Switch	
S501	25030356	NRS-283-BA, Rotary
	Socket ass'y	
P001,P101	2009990222A	NSAS-8P0323
P353	2009990224	NSAS-12P0325
P451,P452	2009990200	NSAS-6P0282
P455,P457	2009990223	NSAS-12P0324
P711	2009990249	NSAS-6P0362
P803,P804	2009990225	NSAS-4P0326
P852,P872	2009990250	NASA-6P0363
P873		
	Plugs	
P355a	25055136	NPLG-6P120
P462a,P704a	25055133	NPLG-3P117
P702a	25055139	NPLG-9P123
	Radiator	
	27160220	RAD-51(B)
	Plates	
	27160313	Bus
	27160215-2	Bus
	Ground plate	
	27141059	

BALANCED CD INPUT TERMINAL PC BOARD (NAETC-4501-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
P409,P410	25050777	NSCT-3P572

BALANCED LINE INPUT TERMINAL PC BOARD (NAETC-4502-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
P411,P412	25050777	NSCT-3P572

BALANCED OUTPUT TERMINAL PC BOARD (NAETC-4503-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
P305,P306	25050776	NSCT-3P571

PHONO INPUT TERMINAL PC BOARD (NAETC-4504-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C401,C402	373631524	1500 pF, 100V, Film (KP)
C403, C404	373631014	100 pF, 100V, Film (KP)
	Terminals	
P401,P403	25045161	NPJ-2PDBL58

INPUT SELECTOR SWITCH CIRCUIT PC BOARD (NASW-4506-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diode	
D782	223163 or 223205	1SS133 or 1SS270A
	Capacitor	
C301~C304	373632224	2200 pF, 100V, Film (KP)
C782~C784	374721034	0.01 μF, 50V, Film (TF)
	Relaies	
RL301,RL302	25065335	NRL-2P1.25A-DC5-045
	Switches	
S301a,S302a	25065457	NSS-26162, Slide
S401	25030330	NRS-2211-BA, Rotary
S403	25030357	NRS-448-20RJ, Rotary
	Sockets	
P351	2009990219	NSAS-14P0320
P355	2009990221	NSAS-12P0322
P453,P454	2009990230	NSAS-6P0333
P459		
P460,P461	2009990219	NSAS-14P0320
P462	2009990231A	NSAS-6P0334
	Plugs	
P451a,P452a	25055133	NPLG-3P117
P705a,P711a		
P701a	25055139	NPLG-9P123

OUTPUT TERMINAL PC BOARD (NAETC-4507-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
P301,P303	25045161	NPJ-2PDBL58
P413,P415		
P417,P419		
P421		

INPUT TERMINAL PC BOARD (NAETC-4508-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
P405,P407	25045161	NPJ-2PDBL58

MICROPROCESSOR CIRCUIT PC BOARD (NADG-4509-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q701,Q702	22240358	LB1638
Q707		
Q705	22240616	TMP47C440AN-G701
Q706	222951	M51943BSL
Q730,Q731	222780058MAT	AN7705F
	Transistors	
Q703,Q704	2213090	DTA114YS
Q708		
Q709	2213650	DTD113ZS
	Diodes	
D701	223163 or	1SS133 or
	223205	1SS270A
D702	224450562	MTZ5.6B, Zener
D703~D711	225142DX2	SEL2913K-DX2, LED
D712,D713	22380046 or	AM01Z or
	22380035	GP104003E
D730	22380039	1D4B42
	Cores	
L701~L704	230906	BL02RN2-R62
L706~L708		
	Coils	
L705	233409K220	NCH-1284
L730	231069A	NCH-1119
	Capacitors	
C701,C703	374721035	0.01 μF, 50V, Film (TF)
C713,C714		
C702,C704	354744709	47 μF, 16V, Elect.
C709,C712		
C734		
C706	354741009	10 μF, 16V, Elect.
C707	375524744	0.47 μF, 50V, Film (MMT)
C711	354784799	0.47 μF, 50V, Elect.
C718,C719	3020033	B8XC0113-33N, C-Block
C720,C721	374721034	0.01 µF, 50V, Film (TF)
C730	3500151	2200 μF, 16V, Elect.
C731	354722219	220 μF, 6.3V, Elect.
C736	354724719	470 μF, 6.3V, Elect.
C738,C739	374722235	0.022 μF, 50V, Film (TF)
	Osc,element	
X701	3010150	CST4.00MGW
	Resistors	
R725,R726	49163103405	10K*5, Resistor network
R730	441628204	82 Ω, 1W, Metal oxide film
R731	452530104	1 Ω, 1/2W, Metal
	Sockets	
P701	2009990110	NSAS-18P0167
P702	2009990226A	NSAS-18P0327
P703	2009990227	NSAS-4P0328
P704	2009990233	NSAS-6P0336
P705	2009990232	NSAS-6P0335
	Plug	
P730	25055174	NPLG-2P158

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S701	25030359	NRSF-112-20RM
	Holder	
	27190894	(LED9)

PHOTO RECEIVING CIRCUIT PC BOARD (NADIS-4510-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Photo Receiving unit	
U751	24130007	GP1U571X
	Transistor	
Q751	2213090	DTA114YS
	Diodes	
D751	225142DX2	SEL2913K-DX2, LED
D752,D753	223163 or	1SS133 or
	223205	1SS270A
	Capacitor	
C751	354744709	47 μF, 16V, Elect.
	Holder	
	27190787	(LED1)

RI-TERMINAL PC BOARD (NAETC-4512-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Stereo jack	
P700	25045330	NPJ-2PDBL184, ST-Jack
	Plug	
P703a	25055132	NPLG-2P116

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4513-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q921~Q924	2211945	2SK246-GR
Q951,Q952		
Q961,Q962		
Q925,Q926	2211455	2SA1015-GR
Q953,Q963		
Q927,Q928	2211255	2SC1815-GR
Q954,Q964		
Q929,Q930	2202115 or	2SD2061-E or
Q955,Q965	2202116	2SD2061-F
Q931,Q932	2202175 or	2SB1370-E or
Q956,Q966	2202176	2SB1370-F
	Diodes	
D921	22380057	RBA-402L
D923,D925	223194	EL1Z
D952,D953		
D962,D963		
D927~D930	225251	TLR112, LED
D954,D955		
D964,D965		
D951,D961	22380057	RBA-402L
	Capacitors	
C921,C923	373554334	0.043 μF, 250V, Film (MKP)
C951,C952		
C961,C962		
C925,C927	3500152	4700 μF, 25V, Elect.
C929~C932	391621017	100 μF, 6.3V, Elect.(FS)
C955,C956		
C965,C966		
C953,C954	3500153	2200 μF, 35V, Elect.
C963,C964		

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R621~R924	452530624	6.2 Ω, 1/2W, Metal
R925,R926	442524724	4.7 KΩ, 1/2W, Metal oxide film
R951,R952	442521204	12 Ω, 1/2W, Metal oxide film
R961,R962		
R953,R963	442528224	8.2 KΩ, 1/2W, Metal oxide film
	Radiator	
	27160315	RAD-95(B)
	27160316	RAD-96(B)
	Ground plate	
	27141059	

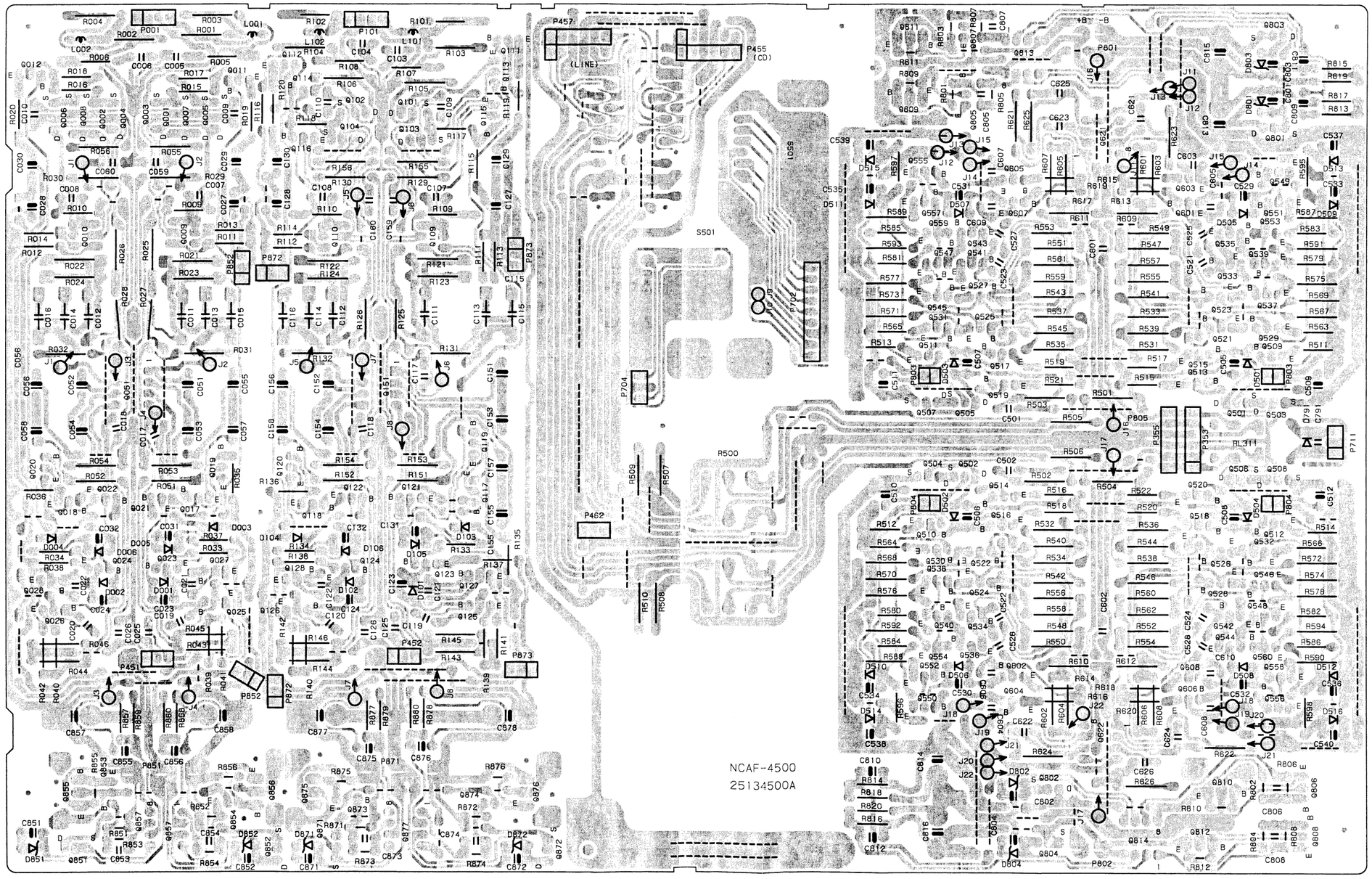
POWER SWITCH CIRCUIT PC BOARD (NASW-4514-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
⚠ C901	3500065A	0.01 μF, AC400V/125V, Film (IS)
⚠ C903	3500077	4700 pF, Film (IS)
	Switches	
⚠ S901	25035550	NPS-111-L512P
	Covers (Capacitor)	
⚠ C901a	27301216	SB1925A
⚠ C903a	27301216	SB1925A
	Fuse holder	
⚠ F902a	25050065	YSH-403T

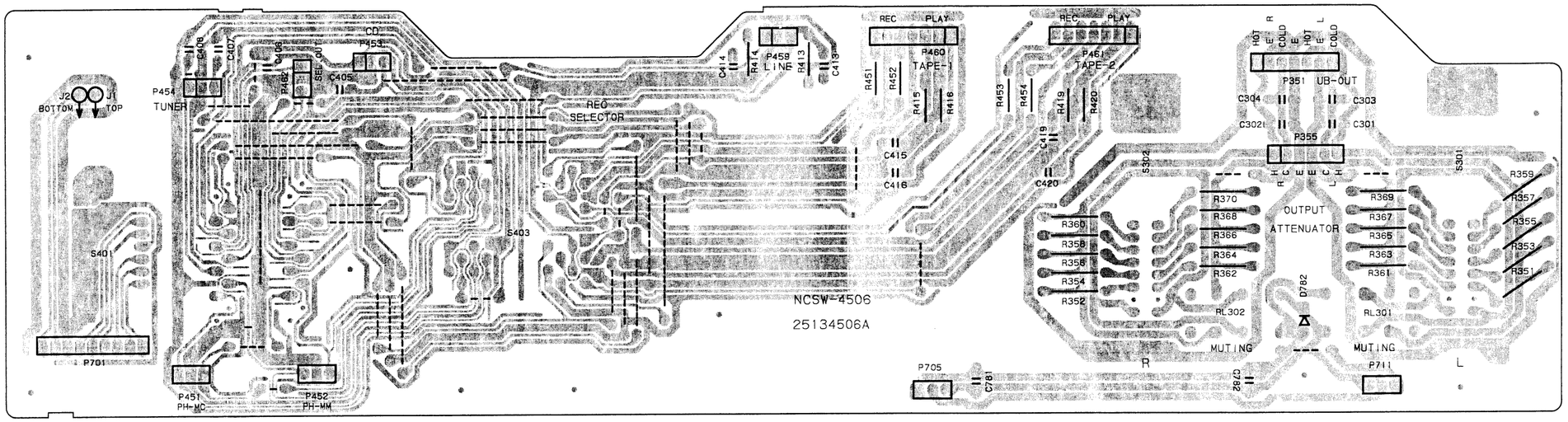
NOTE:
THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

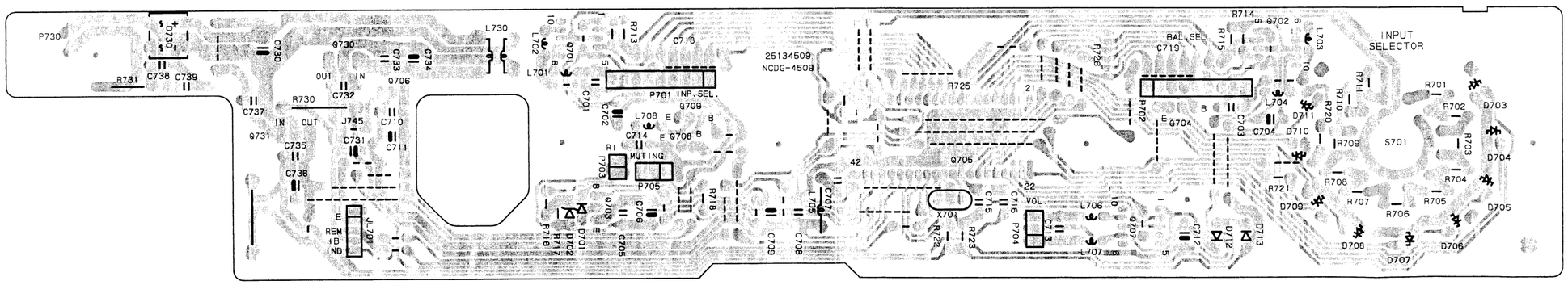
NAAF-4500



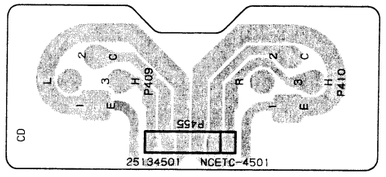
NASW-4506



NADG-4509



NAETC-4501



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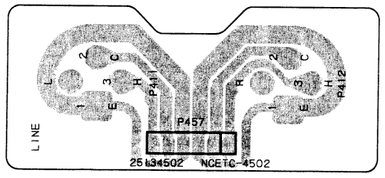

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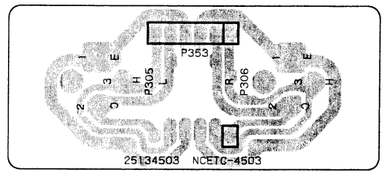
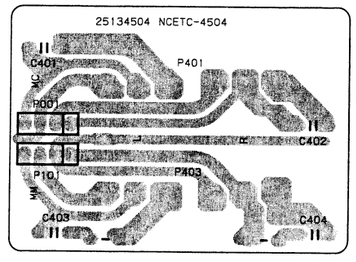
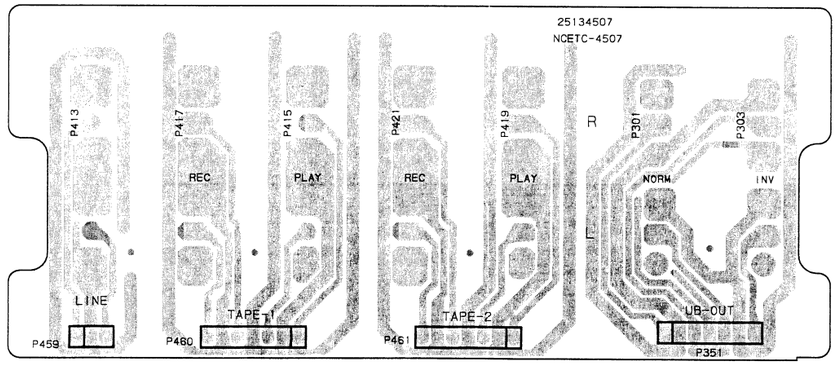


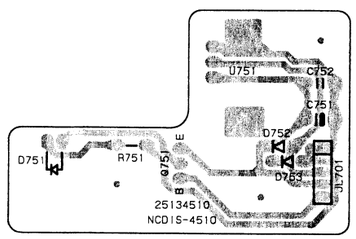
NAETC-4504



NAETC-4507

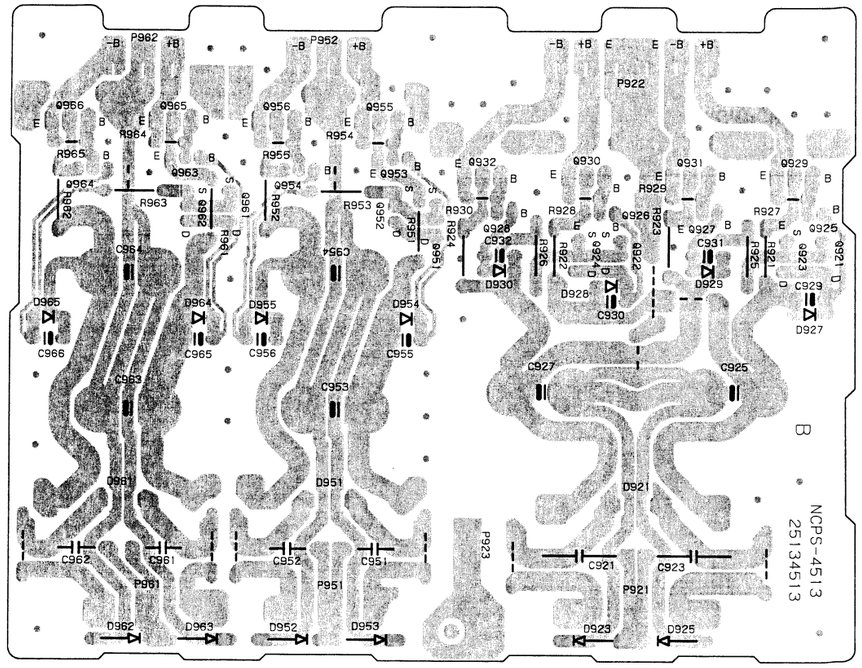


NADIS-4510

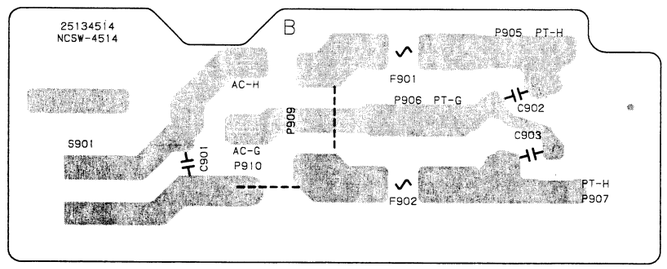


NAETC-4512

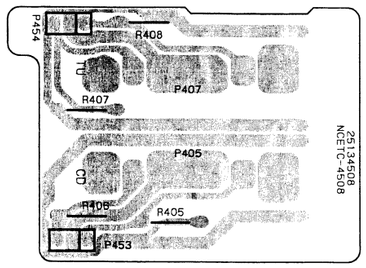
NAPS-4513



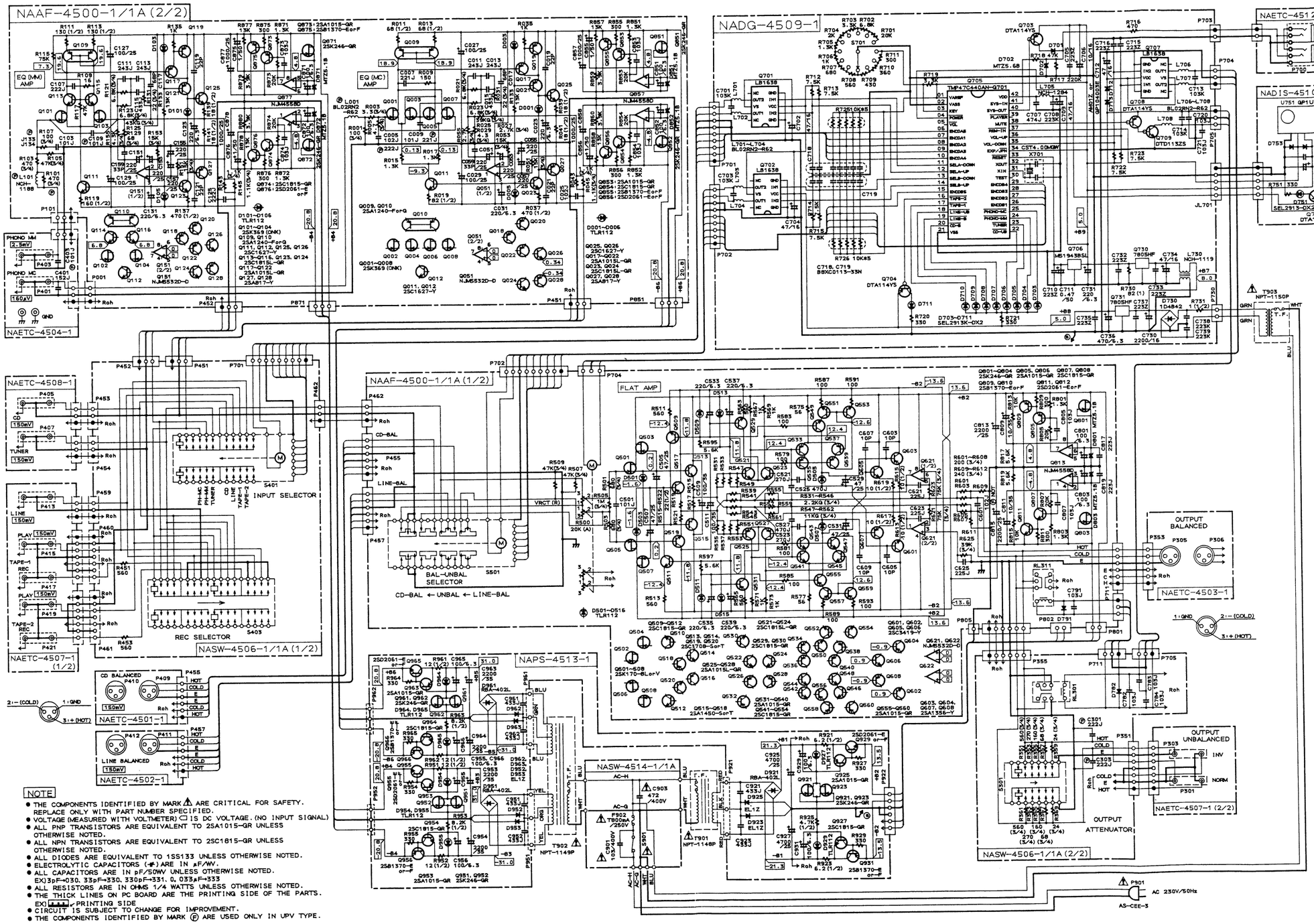
NASW-4514



NAETC-4508



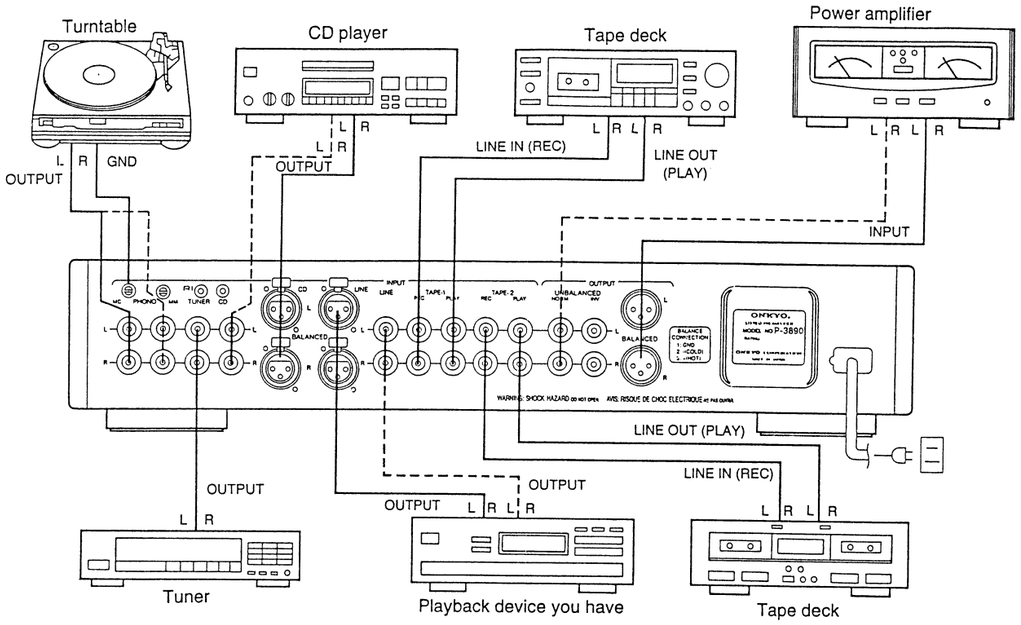
SCHEMATIC DIAGRAM MODEL P-3890



NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ☐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (-#) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 3pF→030, 33pF→330, 330pF→331, 0.033μF→333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) ▭ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.
- THE COMPONENTS IDENTIFIED BY MARK Ⓕ ARE USED ONLY IN UPV TYPE.

SYSTEM CONNECTIONS



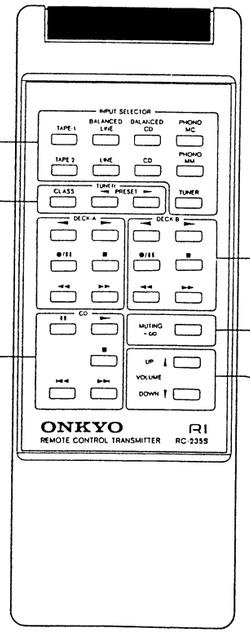
REMOTE CONTROL TRANSMITTER

Explanations in italic explain which buttons to use when operating the unit. Explanations in standard type explain which buttons to use when operating ONKYO devices connected to the unit.

Input Selector Buttons (TAPE-1, TAPE-2, BALANCED LINE, LINE, BALANCED CD, CD, PHONO MC, PHONO MM, TUNER)

Tuner Operation Buttons (TUNER)
CLASS: Class selector button
◄ PRESET ►: Preset memory DOWN/UP buttons

CD Operation Buttons (CD)
These buttons are used to operate an ONKYO CD player with the RI mark.
❚❚ : Press this button to pause the CD play back.
To resume disc play, press the PLAY (►) button.
► : Press this button to play the CD player.
■ : Press this button to stop the CD player.
⏮ : Press this button to go back to the beginning of the current track and again to skip back to the previous track.
⏭ : Press this button to skip to the next track.



Tape Operation Buttons (DECK-A, DECK-B)
These buttons control ONKYO double cassette tape decks that can be remote controlled. Use the DECK-B buttons to control single cassette tape decks with the RI mark.
◄ : The tape plays, moving from right to left, or, in the recording stand-by mode, recording begins.
► : The tape plays, moving from left to right, or, in the recording stand-by mode, recording begins.
●/❚❚: When this is pressed, the recording stand-by mode is entered.
■ : Interrupts all operations.
◄◄ : Fast forward from right to left.
►► : Fast forward from left to right.

Audio Muting Button (MUTING - ∞)
This button temporarily switches off the sound from the speaker or headphone. Pressing the button again or using the POWER button to turn the power on will turn off the audio muting. This function can only be controlled by the remote control transmitter.

Volume Buttons (UP, DOWN)

PACKING PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A851	29052411	Carton box [BLK]
A851	29052461	Carton box [SIL]
A852	29091574	Pad, Left
A853	29091575	Pad, Right
A854	261504	Paper tape
A855	29100037A	650×500 mm, Poly-vinyl bag
A857	282301 or	Sealing hook or
	282311	Sealing hook
A858	29110071	Damplon tape
	Accessary bag ass'y	
A902	29341741	Instruction manual
A904	24140235A	RC-235S, Remote control unit
A905	3010054	UM-3, Battery
A906	29100097	Poly-vinyl bag for accessary
A907	2010200	3.5 mm Mini plug ass'y
	29365020F	Warranty card
	29100094A	Poly-vinyl bag (Warranty)
	29355133A	DPB Caution

NOTE [BLK]: Only Black models
[SIL]: Only Silver models